Best Available Copy for all Pictures

COMPONENT PART NOTICE

THIS PAPER IS A COMPONENT PART OF THE FOLLOWING COMPILATION REPORT:

(TITLE):	Proceedings, Conference and Training Workshop on Wildlife Hazards to
	Aircraft Held at Charleston, South Caroline on 22-25 May 1984.
SOURCE):	PEER Consultants, Inc., Rockville, MD.

To order the complete COMPILATION REPORT USE AD-A148 330

THE COMPONENT PART IS PROVIDED HERE TO ALLOW USERS ACCESS TO INDIVIDUALLY AUTHORED SECTIONS OF PROCEEDINGS, ANNALS, SYMPOSIA, ETC. HOWEVER, THE COMPONENT SHOULD BE CONSIDERED WITHIN THE CONTEXT OF THE OVERALL COMPILATION REPORT AND NOT AS A STAND-ALONE TECHNICAL REPORT.

THE FOLLOWING COMPONENT PART NUMBERS COMPRISE THE COMPILATION REPORT:

TITIE.

ADW.

	AUF:	IIILE:
	AD-PO04 17	7 Birds and Aviation.
	AD-P004 17	8 Avoiding Serious Bird Strike Incidents.
	AD-P004 17	
	AD-P004 18	Accidents and Serious Incidents to Civil Aircraft due to Birdstrikes.
	AD-P004 18:	Analysis of Bird Strikes Reported by European Airlines 1976-1980.
	AD-P004 18:	2 Air Force Bird Strikes.
	AD-P004 18:	Worldwide Birdstrike Statistics of Lufthansa German Airlines.
	AD-PQ04 184	
	AD-P004 185	
	AD-P004 186	
	AD-P004 187	Microscopic Identification of Feathers in Order to Improve Birdstrike Statistics.
12_	AD-P004 188	The Use of Small Mobile Radars to Detect, Monitor, and Quantify Bird Movements.
	AD-P004 189	On the Altitudinal Distribution of Birds and Bird Strikes in the Netherlands.
	AD-P004 190	Blackbirds and Starlings: Population Ecology and Habits Related to Airport Environments.
	AD-P004 191	
	~AD-P004 192	
	AD-P004 193	
	AD-P004 194	
	AD-P004 195	
40	AD-PO04 196	(Federal Aviation Administration) Policy Regarding Solid Waste Disposal Facilities.

This document has been approved for public release and suke its distribution is uniformed.

COMPONENT PART NOTICE (CON'T)

AD#: TITLE:

AD-P004	197	Airport Bird Hazards Associated with Solid Waste
		Disposal Facilities. (
AD-P004	198	Successful Control of Guils and other Birds at a
		Sanitary Landfill.
AD-P004	199	Effectiveness of an Overhead Wire Barrier in Deterring
		Guils from Feeding at a Sanitary Landfill.
AD-P004	200	Effectiveness of an Overhead Wire Barrier System in
		Reducing Guil Use at the BFI Jedburg Sanitary Landfill,
		Berkeley and Dorchester Counties, South Carolina.
AD-P004	201	Evaluation of Effectiveness of Bird-Scaring Operations
		at a Sanitary Landfill Near CFB Trenton, Ontario, Canada.
AD-P004	202	Development of Bird Hazard Reduction for Airport Operational
		Safety.
AD-P004	203	The Bird Strike Situation and Its Ecological Background in
		the Copenhagen Airport, Kastrup.
AD-P004	204	Bird Control Program, Orlando International Airport.
AD-P004	205	Staff Assistance to Bases for Bird Hazards.
AD-P004	206	Bird Strike Avoidance System for Dover AFB, Delaware.
AD-P004	207	Bird Strike Committee Europe.
AD-P004	208	Birds and Airport Agriculture in the Conterminous United
		States: A Review of Literature.
AD-P004	209	The FAA (Federal Aviation Administration) Grant-in-Aid
		Assurance, Far Part 139, and Airport Hazards.
AD-P004	210	The Potential of the NEXRAD (Next Generation Weather Radar)
		Radar System for Warning of Bird Hazards.

Accession	For
NTIS GRAS	eI I
DTIC TAB	õ
Unannounce	od 🔲
Justificat	ion
Ву	
Distribut	lon/
Availabil	Lity Codes
Avai	l and/or
Mist Sp	ecial
A-1	



AD-P004 18(



ACCIDENTS AND SERIOUS INCIDENTS TO CIVIL AIRCRAFT DUE TO BIRDSTRIKES

John Thorpe, Design Surveyor, Crysl Aviation Authority, Safety Data & Analysis Unit, Brabazon House, Redhill, Surrey RH6 1SQ, England

ABSTRACT

The Paper contains detailed histories of accidents and serious incidents e.g. double engine ingestion, holed airframe, for the years 1981 to 1983. An attachment contains a summary of all fatal accidents due to bird strikes between 1912 and 1980. The paper is divided into three groups;

transport aeroplanes over 5700kg (12,500lb) and executive jets 200 aeroplanes below 5700kg $_{1}$ are $_{2}$ helicopters,

No attempt has been made to analyse the information although it is apparent that for transport aeroplanes the critical area is engines and for light aeroplanes and helicopters the windshield may be critical.

INTRODUCTION

Surprisingly the first fatal accident caused by a birdstrike was when a Wright Flyer crashed after striking gulls in 1912. Since then there are known to have been 18 fatal accidents to civil registered aircraft and at least 34 aircraft destroyed. It is likely there are more, as information is only accurate for about the last 20 years. Of these fatal accidents, 5 involved public transport aircraft and 13 involved general aviation aircraft.

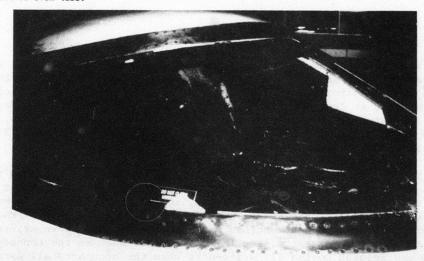
The number of fatal accidents to transport sized aircraft is thus quite modest, and there have been no fatal accidents involving jet airliners. The increased awareness of the problem, implementation of proper measures at a growing number of airports around the world, and tougher airworthiness criteria for aircraft and engines may account for this. However, there have been some very near misses in recent years such as the Kennedy Airport DC 10 and Belgian Boeing 737 write-offs when the occupants all escaped from the burning aircraft. There have also been many cases of multiple engine damage, fortunately with just sufficient power to return, or runway length in which to stop.

The author would welcome any new or additional information.

Serious Incidents to Aeroplanes over 5700kg together with Executive Jets

Date	Aircraft	Regn	Operator	Location	Total Aboard	Injury to Occupants		
15.2.81	Fokker F28	VH-	v•inc. va. •	Derby Australia	-	Nil		
	During take-off r Take-off was aban blades, but cowli	doned after	an uncontained fai	n (Nycticorax caledo lure of engine 1. Co	nicus weight ompressor ca	750gm). ase holed by 2		
25.2.81	DC10	N-	-	New York JFK	-	Nil		
	During climb a fl engine 2 and majo	ock of gull: r damage to	s was ingested in energine 3.	ngine 2 & 3. There w	was medium d	amage to		
25.3.81	B707 (JT3D)	-	-	Kanombe, Rwanda	-	Nil		
	During landing bi engine damage.	rds of prey	were ingested in er	ngine 1 and 2. Aircr	raft was imo	bilized by		
29.3.81	B727	N-	gri - right bris.	Nr New York JFK	9 - 1 6 6	1 Minor		
	During climb at 3,500ft geese were struck, inner and outer panes of first officers windshield shattered, but bird did not penetrate. First officer received facial cuts from glass fragments. Left wing holed.							
7.4.81	Lear 23	N400PG	Private	Lunken Executive Cincinnati, USA	2	1 Killed 1 Minor		

The aircraft was in a climbing turn at about 4000ft when the aircraft struck a Common Loon (Gavia immer weight 3.7kg). The bird penetrated the right windscreen and killed the co-pilot. Windscreen debris damaged No 2 engine which had to be shutdown. The pilot's arm was badly cut but a safe landing was made using the emergency brake chute and with no flaps. The weather was good, the flight being at 11.35 local time. The pilot did not see the bird. The Lear 23 is of an age such that the windscreen was not required to withstand a bird of even 41bs.



18.4.81 NAMC YS11A N173RV Sced Pax Sand Point, Alaska 39 Nil

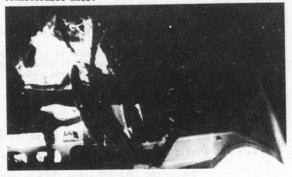
The aircraft was on short finals when a gull struck the windshield centre post, the remains seriously reducing the pilots vision. The pilot misjudged distance and altitude, the main gear impacted an embankment on the approach, both main gear wheels were knocked off and the aircraft came to rest 1500ft beyond the threshold. The damage was substantial.

		•					
6.5.81	A300B	P-BGEB	Air France	Paris Orly	-	Nil	
	460gm). Birds	ingested in	both engines damag	ck of wood pigeons (Co ing four fan blades on lso struck wings, land	each one.	Take-off	
24.5.81	B737	-	-	Johor Bahru, Malaysia	-	Wil	
	Both engines we	re damaged	during the take-off	run.			
21.6.81	B737	G-BMHG	Air Europe	Naples, Italy	-	Wil	
	the aircraft. at about 120 kt using reverse t to the nacelles	The birds, p	pigeons (Columba sp Several impacts we rakes. Later some i steering cables and	seen to land on the ru) took off just before ere felt so the take-o fusible plugs blew. T i to both engines. Si Both engines were cha	the aircra ff was succ here was bi x LP compre	ft reached them essfully abandoned rdstrike damage	
4.7.81	DA01 Mercure	F-BTTG	Air Inter	Ajaccio Corsica	-	Nil	
	During the clim	b at 3000ft	250kts the outer w	indshield was shattere	d after a v	iolent bird impact.	
6.7.81	DC10-30	N112WA	World Airways	Gatwick UK	-	Nil	
í i	the engine shut together with s	down. The pome bird rep	runway was inspected mnants. The bird res	seen from engine 3 and and 80 or more piece mains were identified. The engine was serie	s of engine as either F	were found, eral or Wood	
20.7.81	DC8-62	-	-	Thesalonika, Greec	e -	Nil	
			• •	ts (Phasianus colchicu Repair cost was 145,00	•		
8.8.81	L1011	G-BEAK	British Airways	Larnaca Cyprus	347	Nil	
		in engines 1		so the take-off was about revealed power loss of			
19.8.81	DC3	ET-ABY	Ethiopian Airlines	Jimma	•	-	
	Aircraft sufferribs.	ed a birdstx	rike causing wing le	eading edge skin damage	e and five l	proken or cracked	
29.8.81	B747SP	-	-	Wellington NZ	-	Nil	
	During take-off Auckland.	struck floo	ck of gulls. Uncont	ained failure on engi	ne 1. Airc	raft diverted to	
1.9.81	Pokker F28	SE-DGC	Linjeflyg	Near Ornskoldsvik Sweden	-	Nil	

While flying at 8000ft and slightly above 300 kts the aircraft struck an Osprey (Pandion haliaetus, weight 1.5 kg). The bird penetrated the skin above the windshield damaging frames, looms etc and entered the flight deck causing considerable mess.



changed.



12.9.81	B747		Garden gad galagan	Delhi,India	-	Nil	
			ures (Cathartidae). of flying debris.	. Engine 2 suffered o	uncontained f	ailure holi	ng
24.9.81	B737	-	tuante Trans	Nagaya, Japan	-	Nil	
	Abandoned take- engines.	off after gu	lls were ingested i	in both engines. Blac	de damage was	found in b	oth
16.10.81	A300B	F-	Air Inter	Paris, Orly		Nil	
	During approach Birds ingested			Flock of Stock Doves	(Columba Oena	s weight 35	0gm).
19.10.81	DC8-50		nedpitā ir garestoliki;	Makurdi, Nigeria	nds (5v 31s)	Nil	
				craft struck a flock ines repaired at base			4.8.1
19.10.81	A300B	F-	Air France	Tunis	1900 - 30 - 1966	Nil	
_	Struck flock of Three fan blade			off run. Both Engines	s, Fuselage a	nd wing str	uck.
23.3.82	B747 (JT9D-7)	VT-EFJ	Air India	Jeddah, Saudi Arab	oia -	-	
	No 1 engine and Both engine nos	bring No 2 se domes and	back to idle. Afte	gh a flock of birds ca er touchdown No 2 was e damaged. There were	shutdown due	to vibrati	on.
19.6.82	DC8-63	- 49	lat temperature	Yesilkoey, Turkey	s 710-sket p	Nil	
	Gulls ingested	in engines 3	and 4 during landi	ing run. Both engines	changed.		
11.7.82	B747 (JT9D)	G-AWNA	British Airways	Melbourne, Australia	91	Nil	
	ran down and wa	s shutdown w	ith high JPT. Engi	a flock of birds, loo	ng came on so	was thrott	

idle. Made immediate return, engine 4 shutdown after landing. Birds were racing pigeons (Columbia livia, wt 250 gm) released 100 miles away and returning to Melbourne. Believed 3-4 birds in engine 3 and 2-3 in No 4. The aircraft was at a very light weight. Both engines

1.9.82 B737 G-BGDE British Airways Turin, Italy - Nil

During the take-off 07.20 hrs the aircraft passed through a flock of gulls at 50ft. Engine 2 indicated a vibration warning. Air traffic reported flames from No 2 engine. This was shutdown and the aircraft returned. Engine 2 was changed as it was severely damaged.

12.9.82 B707 G-BFEO Tradewinds Khartoum, Sudan - Nil

At 400ft on take-off the aircraft struck a large stork (Ciconiidae up to 3 kg). The left-nand windscreen was obscured by blood. The aircraft returned where it was found the radome had been severely holed, with large radial crack. The ILS glideslope aerial was broken.

13.9.82 B747CF - - Luxemburg - Ni

During the take-off engine 4 ingested birds resulting in fan and nose cowling damage after it had been pierced by part of a fan blade. The aircraft returned.

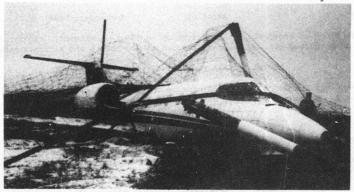
- 3.11.82 DC10 Entebbe, Uganda Nil

 During the climb the aircraft encountered between 11 and 100 herons (Ardea sp, up to 1.8 kg), which were injested in engines 1 and 3. Engine 1 was shutdown.
- 4.12.82 B747(CF6-50) PH-BÓN KLM Amsterdam, 132 Nil
 Netherlands
 During the take-off run at 14.00 hrs GMT on runway 191 at about 1/3 of the runway 151.

During the take-off run at 14.00 hrs GMT on runway 19L at about 1/3 of the runway at 135 kts the aircraft struck a flock of 100 Lapwings (Venellus vanellus, weight 250 gm) suffering multiple engine damage. The take-off was abandoned stopping with 800 metres left. The passengers desembarked via stairs at the end of the runway. Engine 1 beyond economic repair and changed, engine 2 had nine fan blades and some fan exit vanes changed, engine 3 had little damage and engine 4 had one fan blade changed. Wing trailing edge flaps also damaged. About 75 dead birds were found on the runway. Bird patrols were in continuous use.

6.12.82 Lear 35 HB-VFO Private Paris LBG - 1 Serious

At about 8.30 local the aircraft abandoned take-off after V_1 as a result of striking a flock of black headed gulls (Larus ridibundus). The aircraft failed to stop and over-ran striking the ILS installation, seriously injuring the co-pilot. The aircraft was destroyed. The engines were not in fact damaged and there was one birdstrike on the wing.



12.12.82 B737 G-AVRN Britannia Manchester, UK - Nil

During the take-off at about 140 kts the aircraft struck a flock of lapwings, which were ingested in both engines. The aircraft returned. Engine 1 was changed, there was no damage to engine 2.

23.1.83 DHC-7 LX-AHA Arika Dov Airport - Nil

During a night take-off the aircraft struck flock of gulls, which rose off the runway at rotation (85kts). Vision completely lost through left windscreen and partially lost through the right. No power was lost. After climbing to 1500ft, gear and flaps left down, the aircraft returned. Over 60 strikes were counted on the aircraft and 500 to 1000 dead birds were found. The prop spinner was damaged beyond repair, two others damaged. No 2 de-icer boot damaged. Bird remains found in all engine intakes, but no engines were damaged. Wing de-icer boots damaged. One VOR 6 one ADF aerial damged. Birds ingested in air conditioning system. Nose gear taxy light smashed. One over-centre spring cable on main gear was knocked off it's pulley. Crew praised aircraft's ability to cope with such a large flock with so little degradation of performance.

24.3.83 DC10 (CF6-50) LN-RKA SAS Copenhagen, Denmark 160 7 Minor

During the take-off run a flock of gulls was struck as the aircraft rotated at 165 kts. An immediate return was made because of vibration and severe damage to engine 3. Overweight landing by 44 tons, necessitated 10 wheels changed. Emergency evacuation caused minor injuries to seven people. Engine 3 fan, nose cowl and pylon internal structure damaged. On bird passed through engine 1 fan. Runway was wet, fuel jettison and reverse thrust not used due to fire risk as ATC reported engine on fire.

-.6.83 A300B F- Air France Bordeaux, France - Nil

At rotation speed on take-off the aircraft passed through a flock of birds, which were ingested in both engines. Take-off was abandoned at a speed almost equal to V2. The aircraft was successfully stopped on the runway. Both engines were changed. At least one bird had entered each engine.

17.7.83 B737 G-BHVG Orion Bristol, Lulsgate, UK - Nil

At 50ft and 130 kts during approach struck flock of pigeons and gulls. Teleflex cable from landing gear was damaged resulting in loss of ground/air sensor and associated systems.

2.10.83 B747 JT9D-7Q - China Airlines Anchorage, Alaska - Nil

During a down take-off ducks (Anas sp, weight up to 1.5 kg) were ingested in engines 1 and 2. The take-off was abandoned at 80 kts. Two fan blades on engine 2 exited the front engine cowl causing damage to the wing leading edge devices. Engine 1 overtemperatured during reverse thrust due to core damage, but no fan damage. Birds were flying low across the runway, probably on migration.

8.10.83 TU134 - Aeroflot Krasnodar, USSR - Nil

Struck flock of crows (Corvus sp weight up to 550g) on take-off, right-hand engine failed and fuel pump knocked off. Climb rate reduced to 200 ft/min and aircraft made immediate return.

9.10.83 B707 CS-TBA Air Portugal Birmingham, UK - Nil

Take-off was abandoned at 100 kts because of multiple bird strkes and small loss of power on engine 2. No damage found but birds struck engines 1, 2, 3.

31.10.83 DC10 00- - Ostend, Belgium - Nil

During training touch and go large flock of birds were seen on the runway after take-off power had been selected. Aircraft ruturned to Brussels. Inspection revealed damage to engine fan with one blade separated, cowling holed and cabin window damaged. Engine 3 had signs of ingestion but no damage.

3.11.83 B737 G-BGYK Britannia Glagow, UK - Nil

At 50ft, 133 kts during landing round-out large flock of lapwings rose from the runway. Both engines, the wing, fuselage and landing gear were struck. Engine 2 was changed due to blade damage.

4.12.83 B747 (JT9D) G-AWNE BA Muscat, Oman 327 Nil

At about 150 kts on the take-off run a small thump was felt and engine 2 N1 rpm started to fluctuate, with vibration felt and indicated. The engine was shutdown. After fuel was jetisoned the aircraft diverted to a convenient maintenance facility. Engine 2 fan blades damaged, nose cowl torn and accoustic lining holed. Engine changed.

Serious	Incidents	to	Aeroplanes	of	5700kg	and	Below

Data	Name	B	Location	Total	Tainer	Demage	
Date	Aircraft	Regn	Location	Aboard	Injury	Damage	
25.4.81	C182	C-FTKQ	Near Cooking Lake Alberta, Canada	-	Minor	Substantial	
	Aircraft struck Aircraft forced		as sp) which jammed trees.	in carburette	or intake causing	loss of power.	
18.7.81	C152	G-BIOM	Near Lerwick, UK	1	Minor	-	
			00 ft at about 90 k ered a cut nose.	ts the aircra	ft struck a gull	breaking the	
6.8.81	Cessna 402	5Y-ATU	Near Musiars, Ken	ya 1	1 killed	Destroyed	
		illing the	Ruppell's Griffon (pilot instantly. T			•	
1.82	Microlight	G-	Nr Bolton, England	d -	Nil	-	
			ntered and the engi o the frozen ground				
2.2.82	Beech 200	EI-	Nr Nairobi, Kenya	-	-	Substantial	
	While on final approach the pilot attempted to avoid a large flock of birds, but shortly afterwards the pilot felt a large thump at the back end of the aircraft and it pitched up. After recovering a normal landing was made. The bird, a Marabou Stork (Leptoptilos Crumeniferus weight up to 7 kg) struck the fin leading edge, crushing the whole fin leading edge back to the front spar. The fin attachment was not damaged.						
10.2.82	C404		Maya Maya, Congo	-	1 minor	-	
	During approach tinjuring the pilo		t struck bats (Chire	optera) smashi	ing the windscree	n and slightly	
34.82	Cessna 172	P-	Sarre Union, France	-	Nil	-	
	Just before touch	ndown the p	ilot noticed two bu	zzards (Buteo	sp) on the begin	ning of the runway	

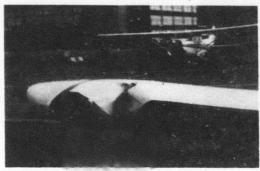
Just before touchdown the pilot noticed two buzzards (Buteo sp) on the beginning of the runway so the pilot overshot and made a circuit. On his second approach both birds were in the air and the pilot took evasive action to miss one of them. The aircraft landed too fast, bounced and the landing gear and propeller were damaged. The bird damaged the left-hand wing leading edge.

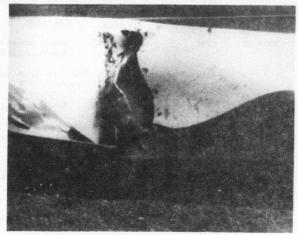
30.7.82

Piper PA23

G-AYWF Amsterdam, Netherlands Nil

While making a night landing a thump was felt as the aircraft descended through 150ft. A Grey heron (Ardea cinerea, weight 1.8kg) had damaged struck the wing leading edge damaging ribs, stringers and holing the skin.





26.7.82 Piper PA23 VH- ·

En route Australia -

Minor

An eagle penetrated the windshield, causing a deep cut to the pilots head and cuts to his hand. The aircraft was landed satisfactorily.

9.9.82

F-BXCA Limoge, France 1 1 Serious

While descending through 1800ft at 140kts the aircraft struck an Osprey (Pandion haliaetus weight 1.5 kg). The windscreen was shattered and the pilot's head and face badly cut.



31.10.82 Piper PA24

Bensbach, Papua New Guinea

Nil

The right-hand windshield was broken by a cockatoo (weight up to 900gm).

16.1.83 Cessna 152 G-BFKG

Middle Wallop, UK 1

Nil Substantial

Loud bang at lift-off as the aircraft struck a bird. The pilot decided to re-land during which the nose wheel collapsed. Dead bird, probably lapwing found on the grass runway.

6.5.83

Piper PA23

G-ASMN

White Waltham, UK

Just after lift-off the aircraft struck a pigeon. The wing leading edge was badly damaged and full rudder was required during landing.

24.5.83

Partenavia P68 SY-BDC

Keekorok, Kenya

Nil

During climbing turn at 400ft after take-off a Bataleur Eagle (Terathopius - weight 2.3 kg) struck the left-hand stabilator. There was severe leading edge damage but no adverse control

Serious Incidents to Helicopters

Date	Aircraft	Regn	Location	Total Aboard	Injury	Damage			
2.3.81	Bell 206	CF-	Vancouver State Canada	4	Four Killed	Destroyed			
	When found at lea	and probab	on a low altitude she en (Corvus corax, weig ly entered the cockpit ard.	ht 1.2 kg) had	struck the ple	exiglass			
3.6.81	Bell 47	G-	Redhill, UK	-	-	Minor			
	While in the hove	er the rotor	r was damaged when a c	row (Corvus sp	weight 550 gm	flew into it.			
2.1.82	Bell 206	G-BAUM	3 miles from Kelso Scotland	•	-	Minor			
	While cruising at 600 ft at 90 kts the pilot felt a slight yaw and simultaneous severe vibration. He shut down the engine and made an autorotative landing in a field. The tail rotor had been struck by a bird (leaving three small feathers) bending the leading edge of a blade out of alignment, and resulting in tail rotor drive shaft damage.								
24.2.82	SA341 Garelle	P-GAMK	Marseilles, France	· ·	Minor	~			
•	While flying at a causing minor in		100 kts the aircraft s passengers.	truck a gull s	mashing the wir	ndow in the door			
13.4.82	SA 341 Gazelle	G-	New Seaton, UK	-	-	Minor			
			was seen to pass over : Sibreglass" fin skin U		-				
15.7.82	AS 332 Tiger	G-TIGG	Nr Montelimar, France	· -	Nil	Minor			
	While en-route at the radar scanner		2000 ft the aircraft s	truck an eagle	, holing the re	adome and jamming			
16.7.82	SA319 Allouette	P-	France	-	Minor	-,			
	While flying at injuring the pile		000 kts a martin (Ripa	ria weight 14 (gm) penetrated	the windshield			
21.7.82	SA318 Allouette	F-	Lyon Satolas, France	-	Wil	-			
	While approaching (sturnus vulgaria		; 500 ft and 6 kts the gm).	windshield was	s penetrated by	a starling			
82	Bell 206	N-	Detroit, U.S.A.		Minor	-			
		licopter wa	broke the windscreen s on autopilot (fitted etroit.						
1.9.83	SA316 Alouette	F-BYCS	Montpelier, France	_	1 Minor	-			
	1.2 kg and 4 ft v	vingspan. T	150 ft and 85 kts the he windscreen was shau ded safely, in spite	ttered, the rea	mains striking				
11.83	Bell 206	-	Sandakan, Borneo	•	Wil	Minor			
	but when the pile the bird must hav and attempted to	ot looked up we realised torn away.	the helicopter, the po the eagle was again of there was something of The wing smashed the trahming Kite (Haliasto	diving with wirld about its "person bubble as	ngs folded. At prey", as it sp nd the body hol	the last second read its wings			

BIRDSTRIKES 1912 to 1980

Fatal Accidents and Destroyed Aircraft over 5700kg (12500lb) together with Executive Jets

Date	Aircraft	Location	Occupants	Deaths	Other
4.10.60	L188 Electra	Boston, USA	72	62	9 serious injuries
	Starling (Sternus vulga stalled and crashed.	aris weight 85 gm) flock in	gested into 3	engines,	aircraft
15.7.62	DC3	Lahore, W Pakistan	2	1	-
	Co pilot killed when vo	alture (Falconiformes) pene	trated windscr	een during	cruise.
23.11.62	Viscount	Haryland, USA	17	17	-
	At 6000ft whistling swe tailplane, aircraft cra	an (Cygnus columbianus weig ashed.	ht 8 kg) struc	k and remo	oved left
28.7.68	Jet Falcon	Lake Erie, USA	3	Nil	Aircraft ditched
	Gulls (Larus spp) inges	sted into both engines on to	ake-off causin	g severe	damage, ditched in
23.7.69	DC3	Nr Djibouti, E Africa	34	Nil	Aircraft desticyed
	Cranes (Grus sp weight	up to 5 kg) blocked carb in	ntakes on both	engines,	ditched in sea.
26.3.73	Lear 24	Atlanta, USA	7	7	1 third party serious injury
		er weight 45 gm) caused dame aft crashed into buildings.		f and seve	ere power loss
12.12.73	Falcon 20	Norwich, UK	9	Nil	
	Gulls* caused severe de	mage to both engines on tal	ke-off, crash	landed.	
14.6.75	NA265 Sabreliner	Watertown, USA	6	Nil	3 serious injuries
	Franklin's gulls (Larus crash landed.	s pipixcan weight 260 gm) is	ngested in bot	h engines	on take-off,
12.11.75	DC10	Kennedy NY, USA	139	N11	2 serious injuries
	Gulls ingested in Eng aircraft burnt out.	3 which exploded, causing a	severe wing fi	re, abando	ned take-off,
20.11.75	RS125 .	Dunsfold, UK	8	-	6 third party deaths
	Lapwings (Vannellus van power loss, crash lande	nellus weight 300 gm) ingested destroying car.	ted in both en	gines on t	ake-off,
6.2.76	Lear 24	Bari, Italy	2	Nil	Aircraft Destroyed
	Gulls ingested in both	engines, power lost and cre	ashed in field	•	
12.11.76	Falcon 20	Naples, Florida USA	11	Mil	11 serious injuries
	Ring-billed gulls (Laru after lift-off, causing	s delawarensis weight 485 g aircraft to crash.	gm) caused bot	h engines	to fail just
4.4.78	Boeing 737	Gosselies, Belgium	3	Mil	Aircraft Destroyed
	Wood pigeon (Columba ps take-off and over-ran.	lumbus weight 450 gm) inges Burnt out.	sted during to	uch and go	, abandoned
25.7.78	Convair 580	Kalamazoo, USA	43	Nil	3 serious injuries
	Sparrow hawk (Falco spa feathered, crashed in f	rverius weight 120 gm) inge Tield.	ested in one e	ngine on t	ake-off, auto

^{*} Common (Larus canus weight 400 gm) and Black-headed (Larus ridibundus weight 300 gm)

⁺ Great black-backed (Larus marinus weight 1.8 kg) Ring-billed (Larus delawarensis weight 585 gm) and Herring (Larus argentatus weight 1.1 kg)

Fatal Accidents to Aeroplanes of 5700 kg and Below

Date	Aircraft	Location	Occupants	Deaths	Damage
3.4.12	Wright Flyer	Long Beach, Calif USA	1	1 .	Destroyed
	Struck gull while fly: drowning pilot.	ng along the beach. Contro	ols jammed and	aircraft	crashed
10.2.29	Arado	Madras, India	2	2	Destroyed
	Shortly after take-off	struck large bird, aircraf	t crashed.		
55	Cessna	Aberdare Htns, Kenya	1	1	Destroyed
	En-route struck vultur ailerons.	e, pilot attempted to avoid	but bird hit	wing tip	jamming
10.1.59	-	Serengeti, Tanganyika	1	1	Destroyed
	Struck a Griffon vultu	re (Gyps fulvus, 5.4 kg) an	o crashed.		
3.63	Beech 35	Bakersfield, Calif USA	1	1	Destroyed
	Common loon (Gavia ims	er wt 3.7 kg) which removed	right hand t	ailplane.	
1.2.64	Turbulent	Nr Belfast UK	1	1	Destroyed
		ude after striking or avoid on windscreen of open single			und 60 yards
2.7.71	Cessna 180	British Columbia, Canada	3	2	Destroyed
	En-route struck a Bald	eagle (Halimetus leucoceph	alus wt 5 kg)	•	
16.4.72	Mitsubishi MU2	Altantic City, USA	3	3	Destroyed
	While in climb struck pilots. Uncontrolled	flock of geese, windshield descent into the sea.	destroyed inc	apacitatin	g one or both
30.8.76	Saab HFJ15	Nr Awassa, Ethiopia	2	2	Destroyed
	Climbing through 200 i	't struck Vulture. Aircraft	went out of	control an	d crashed
23.4.77	Aero Commander 690	Chicago, USA	4	4	Destroyed
	Gull ingested in one of into the water.	ngine, emergency procedures	improperly e	xecuted an	d aircraft spun
19.10.79	Swearingen Herlin	Palo Alto, Calif USA	-	2 killed 1 seriou	Destroyed s
		k of birds clogged an engin it lost control crashing inv aft.			

Fatal Accidents to Helicopters

Nil

